(54) Title: PERSONALIZED WEB PAGE BASED ON MULTIPLE DATA SOURCES

(57) Abstract: An Internet user is provided with focused, personalized content, with the personalization being based on at least two different data sources, such as a clickstream data source and a point of sale or purchase history data source from one or more retail (218) locations. Preferably, the Internet content provides the user with a plurality of useful facilities including development of a shoping list for purchasing items at the retail (218) location where the POS database (222) was developed. In one aspect, the user accesses a web site, which is personalized (212) in response to input of a frequent shopper number or other identifier and, later, the user accesses the web site from a computer located in the retail (218) store, also in response to input of the frequent shopper number, to receive a shopping list and targeted offers or advertisements.

PERSONALIZED WEB PAGE BASED ON MULTIPLE DATA SOURCES

Cross-reference is made to Serial No. 60/154,123 "SHOPPING LIST ORGANIZER APPARATUS AND METHOD (Attorney File No 3730-914) and to Serial No. 60/154,006 "RETAIL LOCATION SHOPPING ASSISTANCE METHOD AND APPARATUS" (Attorney File No 3730-917) filed on September 15, 1999, both incorporated by reference.

The present invention is directed to a web page or other computer based information system or display which is personalized based on at least two different data sources, such as click stream and retail point-of-sale data and especially personalization based on predictive modeling, preferably without requiring personal identification such as by permitting pseudonyms or anonymity.

BACKGROUND INFORMATION

A number of computer programs are configured to act as a personal information manager (PIM) programs, commonly including functions such as a to do list, and an appointment calendar, an address book and the like. Often, such PIM programs permit a limited amount of setting of preferences, such as setting which section to display upon initial opening of the program, audio preferences (for reminders or alarms) and the like. The functions that are provided by such PIM programs are limited for a number of reasons, including that the information typically must be manually input by the user such as inputting appointments, items desired in a to do list, and the like. Many such PIM programs have no facility for obtaining information from remote information sources and thus cannot provide information on items such as upcoming concerts or other events, sales, current weather, stock prices of interest and the like unless specific requests for such information are manually input by the user.

On the other hand, a number of Internet sites or web pages are configured to provide such information from central, remote sites. For example, certain web pages may provide news, sports and/or stock reports, weather information, access to Internet search engines and the like. Certain web sites afford a limited degree of storing user preferences, (such as which features to initially display when the web page is first accessed, the city or region for which weather reports should be initially displayed and the like). However, such preferences typically are based on a single source of

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information, namely preference information which is manually input by a user. Accordingly, it would be useful to provide an information manager or display device which can be personalized using information other than, or in addition to, information manually input by the user.

5   A number of personal information managers and other programs include certain list-processing capabilities such as processing to do lists, shopping lists and the like, e.g. for sorting based on priorities, status and the like. Many such list-processing programs, however, are configured to operate only with lists which have been manually input. Accordingly, such list-processing programs are of little or no benefit in connection with

10   providing suggestions or reminders regarding items which the user has not input, such as items which the user may have forgotten or may not have considered. Accordingly, it would be useful to provide a system and/or program which can provide suggestions or reminders of items, personalized to a user, but which go beyond items which were manually input by the user, i.e. which relate to information other than only the

15   information input by the user. It would be useful to provide a system or program, such as a list-processing system or program, which can use information other than data manually input by a user, to provide personalized suggestions or reminders (e.g. using at least a second data source, in addition to data manually input by a user).

            In many previous systems which provide information and displays according to

20   user-indicated preferences, such information and displays, while possibly differing depending on the identity of a user, would typically always provide the same information or display for a given user, regardless of context or location. However, in some situations the information which is most appropriate or useful for a given user may differ depending on context or location of the user. Thus, a user may want or need certain information

25   when accessing from a home, but may need different information when accessing from a retail location or business. Accordingly, it would be useful to provide a system or program which can provide information that is personalized based not only on the identity of the user but also the user's location or context.

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SUMMARY OF THE INVENTION

The present invention includes a recognition of the existence and nature of certain problems in previous approaches, including as described herein. In one aspect, the present invention provides a personalized web page or other information source where the personalization is based on information other than, or in addition to, preferences that are manually input by a user. In one embodiment, the personalization is based on a combination of two or more data sources such as a combination of computer operation historical data (e.g. prior Internet browsing or other computer selection choices, including so-called "click stream" data) and retail establishment data, such as retail checkout computer or database information ("point of sale" or "POS" database information). In one embodiment the two or more data sources are coordinated (so as to facilitate applying the data to the given individual or household) using an identifier number, which may be a retail establishment customer identifier, number such as a "frequent shopper" identifier number.

Preferably, data sources related to the user and/or a household business or the like, are used to provide reminders, suggestions, promotions, advertising, including targeted promotions and advertising, which can go beyond information that may be manually input by a user, such as by using predictive modeling or other statistical or mathematical techniques.

In one embodiment, users access a personalized web page using an identifier number such as a frequent shopper number. The web page is personalized to include a number of features. Preferably, one feature assists the user in formulating a shopping list. Preferably the shopping list program provides reminders or suggestions, personalized to the user, and resulting e.g., from predictive modeling using data from a one or more retail establishment's frequent shopper and/or POS database and/or a user's click stream and/or electronic commerce ("e-commerce") history.

In one embodiment, the user may develop a shopping list, e.g. over the course of a week or other time period. Upon visiting the store, the user may, in one embodiment, access his or her personalized web page, e.g. at a computer kiosk in the store, for reading, modifying, printing or otherwise using his or her personalized shopping list. Preferably, the store or web page operator provides targeted offers or advertising which may be

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based, at least in part, on the predictive modeling results, statistical, demographic and/or purchase history information regarding the customer or customer's household or the like. Preferably, the predictive modeling goes beyond merely predicting a persistence of past shopping habits, such as by forming a profile of a shopper or household, and predicting changes in the profile e.g. influenced by trends or changes in shopping (or e-shopping) patterns and/or product affinities of e.g. empirically similar households or other non-intuitive data patterns, and/or by non-shopping events such as passage of time.

In one embodiment, further POS or other information about the customer is obtained during a shopping trip. In one embodiment, the location of the shopper and/or the shopper's purchases are sensed continuously or periodically, preferably in real time, and additional targeted advertising or offers may be presented. In one embodiment, the real time purchase or selection information regarding the customer's shopping activities is used to facilitate checkout at the end of the shopping trip.

According to one aspect, an Internet user is provided with focused, personalized content, with the personalization being based on at least two different data sources, such as a clickstream data source and a point of sale or purchase history data source from one or more retail locations. Preferably, the Internet content provides the user with a plurality of useful facilities including development of a shopping list for purchasing items at the retail location where the POS database was developed. In one aspect, the user accesses a web site from, e.g., a home computer, which is personalized in response to input of a frequent shopper number or other identifier and, later, the user accesses the web site from a computer located in the retail store, also in response to input of the frequent shopper number, to receive a shopping list and targeted offers or advertisements. In one embodiment, at least some personalization is performed without the need for user to manually input preference information. In one embodiment, radio tags or transponders are provided for determining locations of users in the retail location and/or consumer's selections of items during the shopping trip including paths through a store and location (coordinates) or duration of stops in a store (e.g. sensed by radio locators or the like), to derive an additional data source for modeling, e.g. by coordinates and pattern recognition.

BRIEF DESCRIPTION OF THE DRAWINGS

Figs. 1A and 1B are block diagrams, depicting systems providing web pages reflecting user preferences or identities according to previous systems;

Fig. 2 is a block diagram depicting components of a personalized web page system according to one embodiment of the present invention;

Fig. 3 is a block diagram depicting the layout of items in a display screen, according to an embodiment of the present invention;

Fig. 4 is a block diagram depicting the layout of items in a display screen, according to an embodiment of the present invention;

Fig. 5 is a block diagram depicting the layout of items in a display screen, according to an embodiment of the present invention; and

Fig. 6 is a flow chart depicting data flow among a plurality of components, according to an embodiment of the present invention.

DETAILED DESCRIPTION

Before describing features of the present invention, certain previous approaches will be described. In the system illustrated in Fig. 1A, a web or Internet host computer 112 is configured to receive, and store in a data base 114, preference information 116, such as selections among two or more choices for which information to initially display, from a user device, such as a personal computer (PC) 118, e.g. over an Internet connection. The preference information is stored in the database 114 associated with an account number, name or other user identifier. Thereafter, when the user connects with the web host 112 and provides the account number or other identifier 122, the web host 112 will access the database 114 and will transmit, to the home PC 118, a web page 124 which is configured with the preferences which were manually input by the user. For example, the user may have indicated a preference for receiving a weather report for a particular location, and accordingly whenever the web host 112 is accessed and the user is identified 122, the web page which is transmitted 124 will contain a weather report for the requested region.

In the configuration depicted in Fig. 1B, the web page 128 sent from the web host 112 to the user's PC 118, may be configured without receiving preference information

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manually input by the user, but, rather, only in response to a identifier message (sometimes referred to as a "cookie") 132. For example, in response to a cookie 132, automatically sent from the home PC 118 to the web host 112, the web host will consult the database 114 and, e.g. configure the web page 128 to, for example, provide a web page based on the information associated with the cookie 132 (such as a greeting message directed to the user, e.g. "Welcome, John Doe").

The embodiment of Fig. 2 provides a system in which a personalized web page or other information transmission 212, while preferably provided in response to an identification number or cookie 214, provides personalization which goes beyond the information provided in the cookie and/or manually input by the user of the home PC or other node 216. In the embodiment of Fig. 2, additional information may include information obtained from, based on or otherwise related to, information from a retail store 218 or other commercial establishment, such as information from a store's point of sale (POS) database 222, frequent shopper database 224 and the like. An example of a point of sale database is a database based on information collected as shoppers pass through a checkout station and purchase items in the store.

A number of items may be used for correlating purchase information with a particular shopper or household. For example, the point of sale information may associate sales with credit card numbers (when purchases are made with credit cards) or with a check account number and/or address (when purchases are made by a check). Many retail locations, especially grocery stores, have a "frequent shopper" program in which users are encouraged to input a frequent shopper identifier number (typically encoded on a card with a bar code or other optical encoding, a magnetic card strip and the like). Often the frequent shopper database 224 includes more extensive information regarding a shopper or household such as address, phone number, bank account number, credit card number, household members, birth dates and the like (to the extent permitted by law and with the customers' permission).

When, as depicted in Fig. 2, the web host 226 can access a database 228 which includes information other than (or in addition to) information provided by the home PC user 216, such as information from a retail location 218, the web host 226 can provide a personalized web page 212 with information that can be of particular use to the user of

the home PC 216 in a number of fashions. In one embodiment, the web host 226 can present information based on predictive modeling 232. Preferably, the web host 226 can assist in performing shopping or purchases. Shopping assistance includes, without limitation, shopping lists, offers, coupons, promotions, suggestions, reminders, rebates and the like. If one or more data sources indicates that the user prefers high quality or luxury items, shopping assistance may include suggestions for high quality or luxury brands of items. Preferably, shopping assistance includes not only traditional product-associated or demographic-associated shopping assistance, but also shopping assistance which goes beyond purchase association and/or demographic association. An example of product or purchase association would be suggesting the purchase of cat litter whenever a purchaser buys cat food. However, such mere single-purchase association does not necessarily take into account other potentially relevant factors (such as the consumer's purchase, last week, of a 50 pound bag of cat litter). An example of a demographic association would be suggesting the purchase of pepperoni pizza when a customer's zip code is located in a university district. However demographic associate may fail to account for such non-demographic factors as a purchase history suggesting the customer is vegetarian.

Predictive modeling, on the other hand, generally relates to predictions which go beyond merely associating one product or purchase with another or associating a product with a demographic indicator. For example, predictive modeling may include forming a profile of a purchaser or household, based on various information sources, and making predictions based on such a profile of needs or desires likely to be felt by the purchaser. For example, the profile may relate to the number of persons in the household, there relatedness, if any, to one another, ages, interests, food, clothing, or music (and similar) tastes of individuals or of the household, and the like. Preferably, the profiles are modified as new information becomes available, or are based on other factors such as the passage of time. For example, if its noted a household suddenly begins purchasing diapers, the predictive model may result in suggesting "back-to-school" clothes an appropriate period (6 years) later. If user purchases reflect a user's preference for classical, but not romantic, period music, the predictive model may offer opera tickets for works by Mozart but not Puccini. If a household which apparently has two adults and a

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six month old child purchases a barbecue, the predictive model might offer a discount on two (but not three) steaks.

In some aspects, predictive modeling includes predictions which are based, in part, on recent purchase histories or patterns. For example, if household typically consumes one six-pack of soft drinks per week, the predictive model may automatically suggest the purchase of soft drinks two weeks after the consumer has purchased a 12-pack of soft drinks.

Predictive modeling may also be used for formulating targeted advertising discounts, coupons or other promotions. In the above two examples, after the consumer has purchased a 12-pack of soft drinks, the predictive model might be used to formulate a promotion, targeted to that particular consumer, offering a discount or other incentive to purchase a new or competing brand of soft drink.

Two or more data sources can also be used for targeting promotions or advertising (or other business purposes) by using business rule-based selection. For example, a retail establishment might have a business rule which targets moderated discounts (or other promotions) to its most frequent or best customers and to its least frequent or "worst" customers and which targets its largest discounts to average-frequency customers. In one embodiment, two or more data sources are used to analyze shopping patterns so as to be able to apply particular sets of business rules (e.g. to identify the least-frequent, average frequency and most frequent shoppers, in the above example).

Although it would be possible for the user to take advantage of aspects of the present invention by always accessing the web host 226 with, e.g. the use of home computer 216, in one embodiment, additional facilities are provided to facilitate shopping and purchasing, at a retail store 218, such as providing a computer or similar device, e.g. in a kiosk 238, in the store location 218, by which the user can access his or her personalized web page 242 e.g. in response to inputting the user's frequent shopper number or other identifier 244. If desired, the kiosk 238 may be a touch screen device. If desired, a password or similar security feature may be required. In this instance, the personalized web page 242 is preferably personalized based on at least two data sources, such as input or "clickstream" data from the home PC 216 and information obtained from the retail store 218 such as from the POS data base 222 and/or frequent shopper database

224. In one embodiment, past purchase behavior or geo-demographic data is combined with continuous time series coordinate location data (derived from radio tags or similar devices) to first determine homoscedastic clusters, and then to use this data to better design, layout and merchandise retail stores and other public facilities, or to more effectively target marketing or informational messages. For example, a user may, during the course of, e.g., a week access the personalized web page from the user's home PC 216 and, during such uses, may, if desired, develop or modify a shopping list stored in the web host database 228. The shopping list may be developed or modified using both information manually input by the user (e.g. adding items which the user wishes to purchase) and/or in response to reminders, suggestions, advertising promotions, discounts, coupons, sales and the like provided the web host 226 to the user's home PC 216, e.g. preferably using predictive modeling 232. When, at the end of the week, the user visits the retail location 218, the user can employ the kiosk 238 to retrieve this developed shopping list from the database 228 for use at the store 218. Preferably, the web page received by the user is personalized based on location or context, as well as the identity of the user or household. For example, the web page as presented in the store kiosk 238 may have an appearance or content different from that when the user accesses the wage page from the home PC 216. For example, the web page as presented in the store kiosk 238 may have content intended to be most useful or applicable while the user is making a shopping trip, and thus may include such items as discounts, coupons, offers, advertisements, etc. specific to that particular retail location 218 (in addition to being personalized to the user), may include a shopping list which is organized in the same order as the aisles of the store 218, and the like.

Providing access to the personalized web page at the store 218 can be further useful in coordinating shopping between various members of a household. For example, if a first member of the household has purchased an item between the time it was placed on the household's shopping list (and stored in the database 228) and the time that a second household member visits the store 218, such item preferably will have been removed from the shopping list stored in the database 228 so that the second household member will not be prompted to purchase an item which has already been purchased for the household. Preferably, the user will receive one type of content at the retail store

kiosk 218, another type of content at the home PC 216 and still another type at other when accessing the web page from other locations (e.g. from a work location, a mobile location and the like).

The personalized web page can be configured to include, or provide access to, any of a number of types of services or informational displays or similar items. any or all of which can preferably be customized for the user or household. Examples include a calendar, particularly showing events known, or predicted, to be of interest, recurring events such as birthdays, anniversaries and the like, and/or events input by the user, a to-do list, preferably sortable or filterable by priority, geographic location, household members and the like, an address book, household controls such as controls for setting household lights, sprinklers, alarms and the like, bill-paying facilities, e-mail sending or receiving facilities, recipe databases, which may include recipes input by the user and/or suggested e.g. based on predictive modeling, health and nutrition information, including dietary information, prescriptions, medical records (preferably encrypted), electronic commerce offers (preferably targeted), personalized messages from retailers or service providers (such as notifications that goods or services have arrived) on-line manuals or instructions for purchased items, weather, news, sports, traffic, highway condition, or ski reports, games or other entertainments, television or movie listings, stock reports, horoscopes, train, bus or plane schedules or reservation facilities and the like. If desired, some or all items on the to-do list may activate a search engine or other software package designed to search the Internet or perform other searching, to identify products or services related to the to-do list item. For example, in response to a to-do list item such as "drop off laundry" the web host 226 may activate an engine which searches for laundries in the vicinity of the user's residence or work place, with special offers or discounts or which may be otherwise of interest to the user.

When one or more frequent shopper numbers or identifiers are used as described above, the present invention can be configured to accommodate a (preferably universal or standard) identifier system which includes not only the user's frequent shopper number but an identifier identifying the retail location or chain associated with the frequent shopper number. In this way, it is possible for a user to access the same personalized web page service by inputting one frequent shopper card at a grocery store and a different

frequent shopper card at, e.g. a bookstore where the host database stores information indicating that both frequent shopper numbers relate to the same individual or household.

Fig. 3 depicts a initial web page screen of a type that a user might access from e.g. a home computer 216. In the depicted embodiment, a plurality of activatable regions 312 (e.g. activatable via a mouse or other pointing device) is provided for selecting features which are preferably customized to reflect the interest of the user, location of the user, previous clickstream or previous purchase history of the user and the like. Also in the embodiment depicted in Fig. 3, a to-do list 314 includes a plurality of items which may be entered by the user, or may be suggested by the host 226 e.g. on the basis of predictive modeling and the like. In one embodiment, some or all items on the to-do list activate search engines which search appropriate offers. For example, when the to-do list 314 includes "haircut", a search engine may locate and display a discount offer at a local barber 316. Alternatively, an item on the to-do list may result in a video or audiovisual advertisement relevant to the to-do item. If the user selects, e.g., the grocery list "button" 322, the screen will display the grocery list as developed by or for the consumer 412 (Fig. 4). The items on the grocery list can reflect a number of inputs including items expressly input by the user, items suggested by the software, such as predictive modeling software, which may be based on previous purchases of that particular user and/or profile information as described above. In one embodiment, offers or advertisements 414 may be provided and may be targeted to a particular customer's habits. For example, if the customer typically purchases brand x pop, an offer may be made for discount of purchases of brand Y, in order to motivate the particular user to try a different brand. The offer may be a manufacturer's offer or may be an offer of a chain or retail store. In one embodiment, some or all of the offers 414 are offers which are not only targeted to the particular consumer but are of limited availability, i.e. not generally available all members of the public. For example, the offer may be available only on the basis of entering the customer's particular frequent shopper number at the beginning of a shopping trip or upon checkout. The shopping list page of Fig. 4 may also display or play one or more advertisements 416.

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Fig. 5 illustrates items of the type that might be shown when a user accesses the web page via a kiosk in the store. In this situation, the appearance is different from the appearance of the web page when accessed from a home computer. In the example illustrated in Fig. 5, the display depicted in Fig. 5 contains a number of items which are personalized or customized to the particular user. The display includes a personalized greeting 512 and provides information regarding the frequent shopper programs 514 for that particular shopper. Items which are known or predicted to be of interest to this particular shopper, (in the illustrated display, a stock average 516 and a particular sports score 518) are provided. A message indicating to the consumer that the previously-developed shopping list, and related coupons, are printing 522 is provided. An advertisement 524, which is preferably a targeted advertisement, is also shown. In one embodiment, the advertisement which is shown is selected from among a plurality of possible advertisements on the basis of, e.g., the predicted probability that the advertisement will result in a desired consumer behavior, such as the purchase of the advertised product. In one embodiment, the advertisement may be provided by the web site on a contingent fee basis, such that some or all of the fee for such advertisement is charged to the manufacturer only if the consumer, in fact purchases the item during the current shopping trip.

Fig. 6 is a flow chart depicting data flow for accomplishing predictive modeling and providing certain targeted offers, according to an embodiment of the present invention. In the embodiment of Fig. 6, a predictive data set can include e.g., retailer POS data 612 as well as clickstream data 614 reflecting visits to a plurality of different Internet sites including the web host 226 described above and preferably including a meal-planning or similar site. An offer data set 616 can include, for example, Internet or e-commerce coupons 618 and product or service offers 622. In use, the consumer enters identifying information such as swiping his frequent shopper card through a card reader, or entering a frequent shopper number or other identifier in a home computer 624.

In response to a consumer identifying himself, the predictive engine 626 accesses an integrated predictive data set using data from various sources such as POS data 612 and clickstream data 614, to develop, update or access a profile of the user. The predictive engine 626 then accesses the offer data set 616 and selects, from among an

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integrated offer data set 628, those offers which are predicted to have the highest probability of success, for the given consumer profile 632.

In addition to using the frequent shopper number or other identifier as described above, it is also possible, according to embodiments of the present invention, to use the frequent shopper number to enhance shopping or checkout. For example, by periodically or continuously detecting the location of the shopper within the store, and correlating the location information with the profile information, it is possible to provide targeted advertisements at appropriate locations within the stores. For example, if it has been determined that a consumer has paused at a bakery counter, the profile for the frequent shopper number for that consumer may be consulted to determine whether there may be appropriate bakery offers or advertisements that may assist the user in bakery shopping. In this way, advertising displays placed within the store can be controlled to present different, targeted, advertisement to different customers. In one embodiment, controllable video displays may be provided on shelves (or otherwise associated with products) which can be controlled (preferably by a wireless communications link, e.g. to a store "backroom" or other computer) to display prices and the like. In some embodiments, the price may be selected or modified depending on the identity of the shopper sensed near the merchandise. For example, the displays can display discounted prices if the shopper qualifies for a "frequent shopper" discount, based on previous purchases. Preferably, prices displayed are based on a price database which is also used during check-out. By using the same database to control both shelf displays of prices and checkout prices, it is possible to reduce or eliminate situations in which a price charged at check-out differs from a displayed price. This can not only avoid customer dissatisfaction, but can reduce the cost of labor, e.g. eliminating the need for personnel to print-out, position, and/or verify shelf price tags.

The display can also be controlled to output promotional offers, advertisements and the like. In one embodiment the offer or advertisement is selected or modified depending on the identity of the shopper sensed near the merchandise. In one embodiment, the offer or advertisement is selected or modified to reflect conditions in the store, such as being modified in real time so as to encourage purchase of over-stocked merchandise, or merchandise nearing the end of its shelf life. In one embodiment the

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consumer may request a particular type of display, such as by using keys, or the like, to request display of a price per unit (e.g. per pound, per dozen, etc.) and/or a comparison on a common basis with prices of various brands, a display of calories, ingredients, etc. In one embodiment a shopper may register one or more display preferences with the store computer, or can carry a transmitter which sends appropriate preference information, so that displays automatically provide the format desired by a shopper, as a shopper passes by, or pauses at, a display. In one embodiment, a shopper can request a discount or lower price, or can make a purchase price offer which is preferably accepted or rejected by the store computer, or a counter-offer is prepared, (e.g. based on a predefined algorithms or data, or a decision or other input provided by store personnel), and the result displayed to the shopper. Preferably, such negotiated prices are stored for use during check-out, and may further be used for purposes such as future pricing decisions, advertisement or promotions planning.

Location information, correlated to customer profiles, can also be useful in designing or configuring store layouts, assessing advertising effectiveness and the like. Location information can be used in answering customer inquiries or providing guidance, e.g. to locate a desired product or store section.

A number of systems can be used for detecting customer location including providing radio locator devices on shopping carts, which will be correlated with customers at the kiosk, and/or providing customers with radio-locator equipped electronic devices, such as cards and/or devices providing electronic shopping list functions or other functions, for use in-store. In one embodiment, radio locators, passive transponders and the like, are provided on some or all products so that product selections made by the user can be noted and recorded e.g. for inventory control, to assist in checkout and/or to update the shopping list as items are purchased (to "checkoff" purchased items and update the consumer's purchase history data base in real time or items are placed in a cart).

When the consumer has completed shopping and is ready to proceed with checkout, preferably the user's frequent shopper number is used to fulfill any discounts or coupon offers that were made specific to a particular consumer, and preferably the

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POS database and/or shopping list for this consumer is updated to reflect the current purchases.

In light of the above description, a number of advantages of the present invention can be seen. The present invention can provide consumers, especially frequent shopper card consumers, with personalized Internet content preferably as an enhancement to grocery frequent shopper programs. In one embodiment, Internet access is provided free, or at reduced cost, as one aspect of the frequent shopper program. By providing sharply focused and personalized reminder suggestions, offers, advertising, coupons, promotions and the like, the user is provided with information which is relevant to his or her decisions or preferences and the amount of irrelevant advertising or other materials is reduced (e.g. compared to traditional advertising). The user can access his or her personalized web page from any Internet access device such as any personal computer in the world, and receive personalized information such as scores for a favorite sports team, stock prices related to the consumer' individual portfolio, offers or advertisements related to the hobbies, interests, taste and lifestyle of the particular consumer and the like. A retail store benefits by increased customer loyalty and traffic and increased responsiveness to advertising which is sharply targeted. By providing a web site which not only receives the clickstream data from a user but also has access to at least a second, independent data source, such as a retail POS data base, relatively accurate and current user profiles can be more readily developed.

A number of variations and modifications of the present invention can be used. It is possible to use some aspects of the invention without using others. For example, it is possible to provide a personalized web page based on two or more data sources without providing an in-store kiosk. Although some features of the invention have been described in connection with Internet communication links, web pages and other Internet-specific examples, some or all features of the present invention can be implemented in other fashions, such as using cellular telephone (including cellular phone devices or systems that can provide internet access or "internet cellular phones"), satellite or similar communication links, networks such as local area networks, wide area networks and other communication systems as will be clear to those of skill in the art after understanding the present invention. Although embodiments of the invention have been

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described in which personalizing information is obtained from a retail location such as a grocery store, database, other data sources can be used in addition to, or in place of retail location databases, as will be apparent to those of skill in the art, after understanding the present invention, such as, for example, government data sources (e.g. driver's license, hunting license, fishing license, building permit information and the like), credit card purchase or other information, mail order (catalogue) purchase or other information, magazine subscription information, bookstore or library purchase or borrowing information, telephone company, electrical company or other utility company information, cable television subscription information, and the like. Although, in one embodiment, a frequent shopper number was used correlating information from various sources, other identifying or correlating information can be used such as name and address information, driver's license or identification card numbers or information, e-mail addresses, universal resource locator (URL) addresses or numbers, bank account numbers, credit card numbers, telephone numbers and other items, or user-defined aliases or pseudonyms (or other devices to protect privacy) as will be clear to those of skill in the art after understanding the present invention. Although embodiments have been described in which a home computer is used for accessing a web page, a web page can also be used accessed from other devices. For example, a television-based Internet connection (so called web tv), a personal digital assistant (PDA) and the like. In one embodiment, an appliance may be provided in the home or elsewhere, specifically intended for connecting to the particular web host 226 which provides the personalized web pages (such as an appliance that is configured specifically for use in the home kitchen). In one embodiment, a retail store 218 or other location may provide such appliances free or at reduced cost, to its customers, or to its frequent shopper customers or other customer subsets, but which may be restricted, e.g. to using the personalized web pages only in connection with purchases from one or more retailers which includes the retail store 218. Although, in some embodiments, the predictive engine uses information uniquely identifying a consumer or household, such as name, address or social security number information, in other embodiments, it is possible to fully or partially protect the user's privacy by using only an arbitrary number, such as a frequent shopper number, to identify the consumer or household, without using the consumer's name or similar

information. This is possible because many of the features described herein are concerned primarily with a purchase history for a given consumer which can be developed in connection with an identifier such as a frequent shopper number, without the need to know the consumer's actual name or identity. Although data processing steps

5   were described herein as being performed in real time, i.e. substantially instantaneously as data is requested or input, it is also possible to perform some or all processing steps in a batch fashion.

The present invention, in various embodiments, includes components, methods, processes, systems and/or apparatus substantially as depicted and described herein,

10   including various embodiments, subcombinations, and subsets thereof. Those of skill in the art will understand how to make and use the present invention after understanding the present disclosure. The present invention, in various embodiments, includes providing devices and processes in the absence of items not depicted and/or described herein or in various embodiments hereof, including in the absence of such items as may have been

15   used in previous devices or processes, e.g. for improving performance, achieving ease and\or reducing cost of implementation. The present invention includes items which are novel, and terminology adapted from previous and/or analogous technologies, for convenience in describing novel items or processes, do not necessarily retain all aspects of conventional usage of such terminology.

20   The foregoing discussion of the invention has been presented for purposes of illustration and description. The foregoing is not intended to limit the invention to the form or forms disclosed herein. Although the description of the invention has included description of one or more embodiments and certain variations and modifications, other variations and modifications are within the scope of the invention, e.g. as may be within

25   the skill and knowledge of those in the art, after understanding the present disclosure. It is intended to obtain rights which include alternative embodiments to the extent permitted, including alternate, interchangeable and/or equivalent structures, functions, ranges or steps to those claimed, whether or not such alternate, interchangeable and/or equivalent structures, functions, ranges or steps are disclosed herein, and without

30   intending to publicly dedicate any patentable subject matter.

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What is claimed is:

1.   A system for providing personalized web content comprising:

a web host computer coupled to a database for storing at least first information relating to a plurality of consumers, each identified by a consumer identifier and second information, different from said first information;

said web host computer configured to receive a consumer identifier from a remote user and provide content to said remote user, said content being selected, at least in part, based on both said first information and said second information.

2.   A system, as claimed in Claim 1, wherein said first information comprises clickstream information reflecting Internet usage by a user identified by said consumer identifier.

3.   A system as claimed in claim 2, wherein said clickstream information includes information from one of an internet cellular phone and a kiosk in a retail location.

4.   A system, as claimed in Claim 1, wherein said second information comprises point of sale information from at least a first retail location.

5.   A system, as claimed in Claim 4, wherein said consumer identifier is a frequent shopper number for said user, maintained for said retail location.

6.   A system, as claimed in Claim 5, further comprising an Internet-access retail-location computer positioned in said retail location accessible by at least said user.

7.   A system, as claimed in Claim 6, wherein content provided at said retail-location computer, upon access by said user, is different from content provided when said user accesses said web host computer from a second, different computer.

8.   A system, as claimed in Claim 1, wherein said content is selected in response to predictive modeling based on said first and second information.

9.   A system, as claimed in Claim 1, wherein said content is selected in response to pattern recognition based on said first and second information.

10.   A system, as claimed in Claim 1, wherein said content is selected in response to business rule-based selection based on said first and second information.

11.   A system, as claimed in Claim 8, wherein said content comprises targeted advertising based on said predictive modeling.

12.   A system, as claimed in Claim 8, wherein said content comprises targeted promotions based on said predictive modeling.

13.   A system, as claimed in claim 1 wherein said content includes shopping-list editing.

14.   A computer-implemented method for providing personalized web content comprising:

coupling a web host computer to a database for storing at least first information relating to a plurality of consumers, each consumer identified by a consumer identifier and second information, different from said first information;

receiving, in said web host computer, a consumer identifier from a remote user and, in response, providing content to said remote user, said content being selected, at least in part, based on both said first information and said second information.

15.   A method, as claimed in Claim 14, wherein said first information comprises clickstream information reflecting Internet usage by a user identified by said consumer identifier.

16.   A method, as claimed in Claim 14, wherein said second information comprises point of sale information from at least a first retail location.

17.   A method, as claimed in Claim 16, wherein said consumer identifier is a frequent shopper number for said user, maintained for said retail location.

18.   A method, as claimed in Claim 17, further comprising positioning an Internet-access retail-location computer in said retail location, accessible by at least said user.

19.   A method, as claimed in Claim 18, wherein content provided at said retail-location computer, upon access by said user, is different from content provided when said user accesses said web host computer from a second, different computer.

20.   A method, as claimed in Claim 14, further comprising selecting said content in response to predictive modeling based on said first and second information.

21.   A method, as claimed in Claim 20, wherein said content comprises targeted advertising based on said predictive modeling.

22.   A method, as claimed in claim 14 wherein said content includes shopping-list editing.

23.   Apparatus, providing personalized web content comprising:

a web host computer coupled to a database for storing at least first information relating to a plurality of consumers, each consumer identified by a consumer identifier and second information, different from said first information;

means for providing content to said remote user in response to receiving, in said web host computer, a consumer identifier from a remote user, said content being selected, at least in part, based on both said first information and said second information.

24.   Apparatus, as claimed in Claim 23, wherein said first information comprises clickstream information reflecting Internet usage by a user identified by said consumer identifier.

25.   Apparatus, as claimed in Claim 23, wherein said second information comprises point of sale information from at least a first retail location.

26.   Apparatus, as claimed in Claim 25, wherein said consumer identifier is a frequent shopper number for said user, maintained for said retail location.

27.   Apparatus, as claimed in Claim 26, further comprising an Internet-access retail-location computer in said retail location, accessible by at least said user.

28.   Apparatus, as claimed in Claim 27, wherein content provided at said retail-location computer, upon access by said user, is different from content provided when said user accesses said web host computer from a second, different computer.

29.   Apparatus, as claimed in Claim 23, further comprising means for selecting said content in response to predictive modeling based on said first and second information.

30.   Apparatus, as claimed in Claim 29, wherein said content comprises targeted advertising based on said predictive modeling.

31.   Apparatus, as claimed in claim 23 wherein said content includes shopping-list editing.

32.   A method for advertising comprising:

presenting a advertisement for soliciting a predetermined behavior from a consumer, to a known recipient;

determining whether said known recipient performs such desired behavior; and

charging a fee for said advertisement dependent, at least partially, on whether said known recipient performs said desired behavior.

33.   A method for collecting retail data comprising:

automatically determining the position of a consumer within a retail location over a period of time;

automatically storing information indicative of the location of the consumer during said periods of time, using a first electronic storage medium.

34.   A method, as claimed in Claim 33, further comprising presenting said consumer with at least a first promotion selected in response to said information indicative of consumer location during said period of time.

35.   A method, as claimed in claim 33 further comprising using said information indicative of location to store continuous time series coordinate location data.

36.   A system, as claimed in claim 35 wherein said continuous time series coordinate location data is used to design retail stores.

37.   A system, as claimed in claim 35, wherein said continuous time series coordinate location data is used to target marketing messages.

38.   Apparatus for collecting retail data comprising:

means for automatically determining the position of a consumer within a retail location over a period of time; and

means for automatically storing information indicative of the location of the consumer during said periods of time, using a first electronic storage medium.

39.   Apparatus, as claimed in Claim 38, further comprising means for presenting said consumer with at least a first promotion selected in response to said information indicative of consumer location during said period of time.

40.   A method for collecting retail data comprising:

automatically determining the selection of a product by a consumer within a retail location substantially at the time of said selection;

automatically storing information indicative of the consumer's selections, using a first electronic storage medium.

41.   A system, as claimed in Claim 40, further comprising using said information indicative of the consumer's selections for inventory control.

42.   A system, as claimed in Claim 40, further comprising using said information indicative of the consumer's selections to assist in check-out.

43.   A system, as claimed in Claim 40, further comprising using said information indicative of the consumer's selections to update a shopping list associated with said consumer.
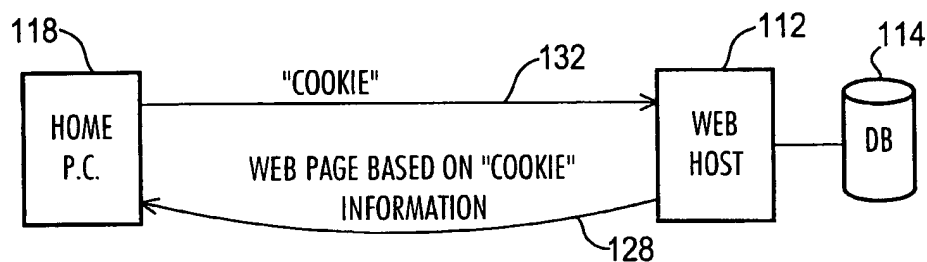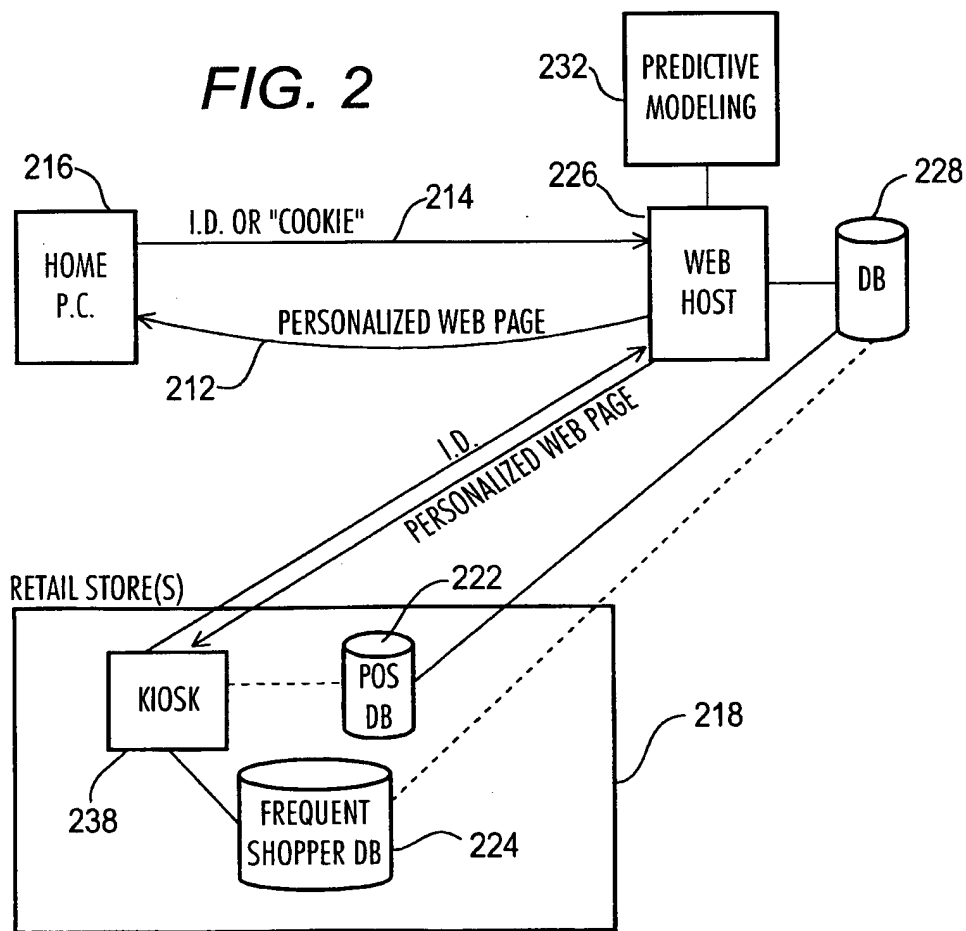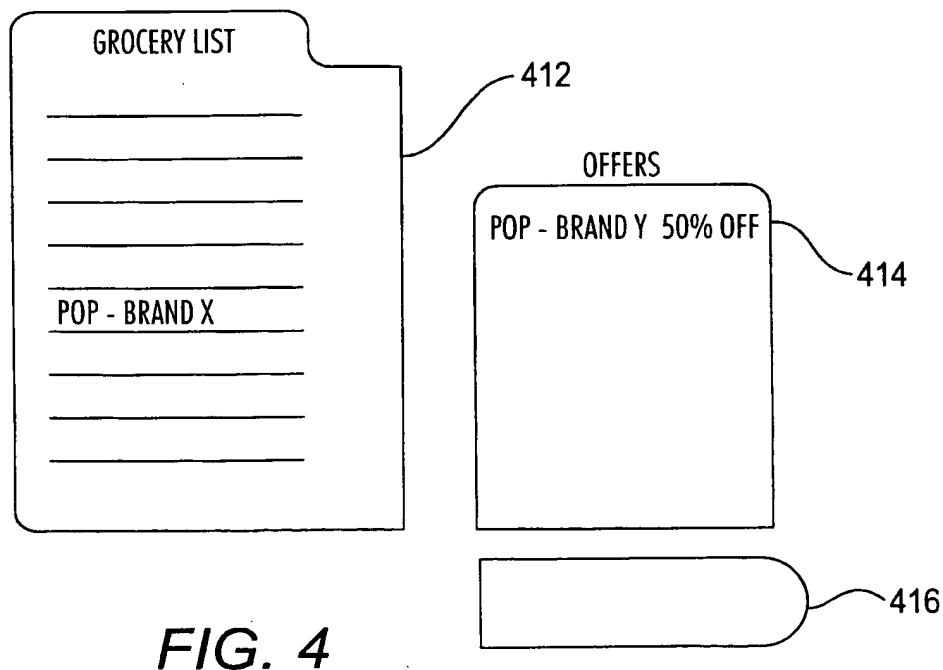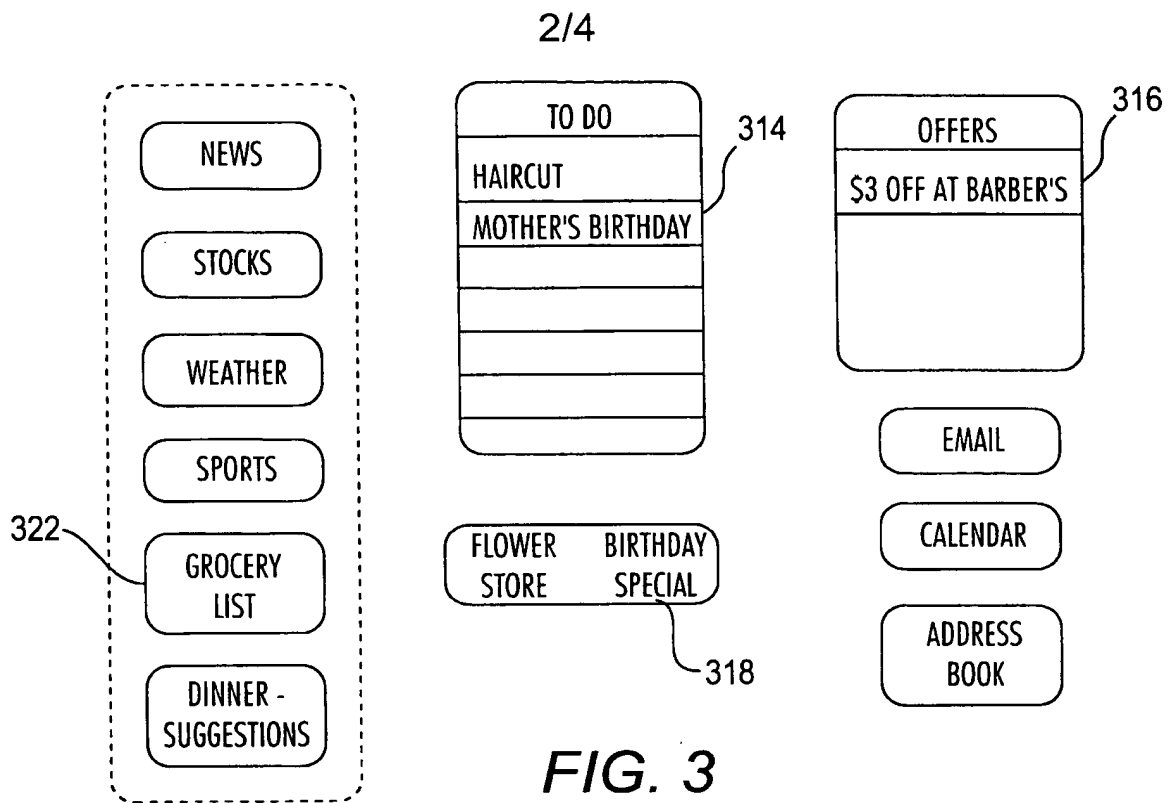
44.   A system, as claimed in Claim 40, further comprising using said information indicative of the consumer's selections to update purchase history data associated with said consumer.

45.   A retailing system for use in a retail location having merchandise displays comprising:

providing a central computer which stores price information, to provide stored price information;

providing a plurality of controllable electronic displays coupled to said computer, wherein said computer controls said displays to display price information, using said stored price information, and wherein said stored price information is also used during checkout.

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FIG. 1A
Prior Art

FIG. 1B
Prior Art

FIG. 2

NEWS

STOCKS

WEATHER

SPORTS

322

GROCERY
LIST

DINNER -
SUGGESTIONS

TO DO   314

HAIRCUT

MOTHER'S BIRTHDAY

FLOWER   BIRTHDAY
STORE   SPECIAL

318

OFFERS   316

$3 OFF AT BARBER'S

EMAIL

CALENDAR

ADDRESS
BOOK

FIG. 3

GROCERY LIST

412

POP - BRAND X

OFFERS

POP - BRAND Y 50% OFF

414

416

FIG. 4

WELCOME

JOHN DOE ⌐ 512

┌ 514
YOU HAVE

5,678

FREQUENT-SHOPPER
POINTS

DINNER
SELECTION

┌ 516
DOW JONES
10,568

OTHER STOCKS

MARINERS
4
BLUEJAYS
4

OTHER SCORES

518

524 ⌐ BRAND X

POP AD

E-COMMERCE

YOUR SHOPPING LIST AND COUPONS ARE PRINTING ⌐ 522

FIG. 5

FIG. 6

	International application No.
	PCT/US00/25228

A. CLASSIFICATION OF SUBJECT MATTER
IPC(7) :G06F 17/60
US CL :705/26,27,1,500,39,42,14
According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

U.S. : 705/26,27,1,500,39,42,14

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)
WEST, EAST, STN

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X,P	US 6,055,573 A (GARDENSWARTZ et al) 25 April 2000, abstract, lines 1-15, col. 2, lines 3-23, col. 5, lines 32-43, col. 20, lines 8-24	1-3, 14, 15, 23, 24
──── Y,P		──── 4-13, 16-22, 25-31
Y	US 5,950,173 A (PERKOWSKI) 07 September 1999, col. 8, lines 17-25, col. 13, lines 56-64, col. 5, lines 10-16.	4-8, 11, 12, 16-20, 21, 25-30
Y,P	US 6,026,376 A (KENNEY) 15 February 2000, col. 1, lines 22-26, col. 2, line 63-col. 3, line 9, col. 6, lines 19-33.	5-7, 9, 10, 13, 17-19, 22, 26-28, 31

☐ Further documents are listed in the continuation of Box C.   ☐ See patent family annex.

*	Special categories of cited documents:	"T"	later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention
"A"	document defining the general state of the art which is not considered to be of particular relevance		
"E"	earlier document published on or after the international filing date	"X"	document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone
"L"	document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)	"Y"	document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art
"O"	document referring to an oral disclosure, use, exhibition or other means		
"P"	document published prior to the international filing date but later than the priority date claimed	"&"	document member of the same patent family

Date of the actual completion of the international search	Date of mailing of the international search report
16 JANUARY 2001	15 FEB 2001

Name and mailing address of the ISA/US Commissioner of Patents and Trademarks Box PCT Washington, D.C. 20231	Authorized officer TARIQ HAFIZ James R. Matthews
Facsimile No. (703) 305-3230	Telephone No. (703) 305-9643

Form PCT/ISA/210 (second sheet) (July 1998)*

Box I   Observations where certain claims were found unsearchable (Continuation of item 1 of first sheet)

This international report has not been established in respect of certain claims under Article 17(2)(a) for the following reasons:

1. ☐ Claims Nos.:
   because they relate to subject matter not required to be searched by this Authority, namely:

2. ☐ Claims Nos.:
   because they relate to parts of the international application that do not comply with the prescribed requirements to such an extent that no meaningful international search can be carried out, specifically:

3. ☐ Claims Nos.:
   because they are dependent claims and are not drafted in accordance with the second and third sentences of Rule 6.4(a).

Box II   Observations where unity of invention is lacking (Continuation of item 2 of first sheet)

This International Searching Authority found multiple inventions in this international application, as follows:

   Please See Extra Sheet.

1. ☐ As all required additional search fees were timely paid by the applicant, this international search report covers all searchable claims.

2. ☐ As all searchable claims could be searched without effort justifying an additional fee, this Authority did not invite payment of any additional fee.

3. ☐ As only some of the required additional search fees were timely paid by the applicant, this international search report covers only those claims for which fees were paid, specifically claims Nos.:

4. ☒ No required additional search fees were timely paid by the applicant. Consequently, this international search report is restricted to the invention first mentioned in the claims; it is covered by claims Nos.:
   1-31

Remark on Protest   ☐ The additional search fees were accompanied by the applicant's protest.

   ☐ No protest accompanied the payment of additional search fees.

BOX II. OBSERVATIONS WHERE UNITY OF INVENTION WAS LACKING
This ISA found multiple inventions as follows:

This application contains the following inventions or groups of inventions which are not so linked as to form a single inventive concept under PCT Rule 13.1. In order for all inventions to be searched, the appropriate additional search fees must be paid.

Group I, claim(s)1-31, drawn to providing personalized web content.
Group II, claim(s) 32, drawn to a method for advertising.
Group III, claim(s) 33-45, drawn to collecting retail data.
The inventions listed as Groups I, II and III do not relate to a single inventive concept under PCT Rule 13.1 because, under PCT Rule 13.2, they lack the same or corresponding special technical features for the following reasons:
    Group I has a web host computer coupled to a database for storing first and second information relating to consumers, the first identified by a consumer identifier where the identifier is received and used to determine the personal website which should be displayed.
    Group II deals with presenting an advertisement for soliciting a predetermined behavior from a consumer to a recipient and determining whether the recipient performs the desired behavior.
    Group III involves determining the position of a consumer within a retail location over a period of time.